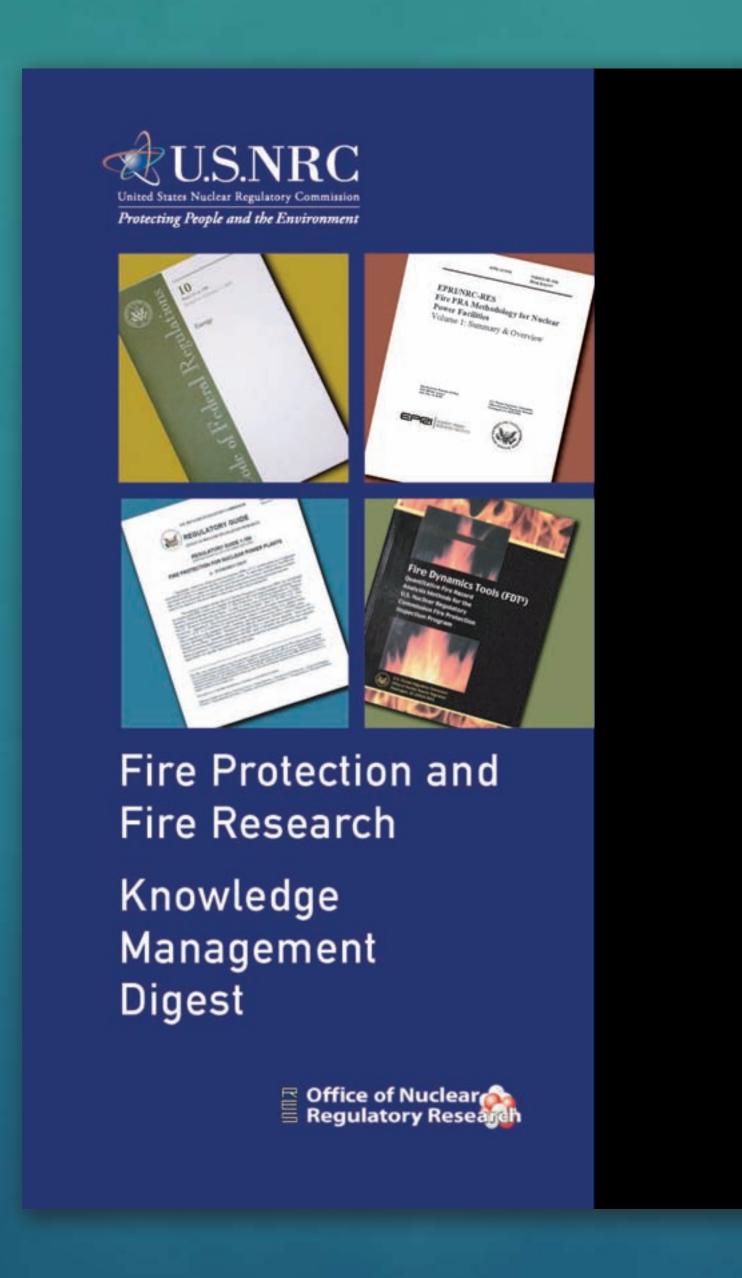


Office of Nuclear Regulatory Research



Fire Research: Learning from the Past to Enhance Tomorrow

Fire Probabilistic Risk Assessment (PRA) and Human Reliability Analysis (HRA)

NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants"

NRC/RES in collaboration with EPRI continues to provide training on NUREG/CR-6850, "Fire PRA Methodology for Nuclear Power Facilities," and support for the frequently-asked-question (FAQ) program. Currently, 51 nuclear power plant units (33 sites) have submitted letters of intent to transition to NFPA 805 via 10 CFR 50.48(c). (Project is ongoing)

NUREG-1921, "Fire Human Reliability Analysis"

NRC/RES in collaboration with EPRI is developing a methodology and associated guidance for performing quantitative HRA for post-fire mitigative human actions modeled in a Fire PRA. (Final Report Winter 2010)

Significance Determination Process Tools for the Fuel Cycle Oversight Process Revision

NRC/RES in collaboration with BNL is developing tools for assessing the risk significance of fuel cycle facility inspection findings. (Project is ongoing)

Fire Modeling

NUREG-1934, "Nuclear Power Plant Fire Modeling Application Guide (NPP FIRE MAG)"

NRC/RES, EPRI and NIST developed a guidance document to assist users of fire models through use of real world nuclear power plants scenarios. (Final Report Winter 2010)

Fire and Electrical Systems Circuit Analysis

Direct Current (DC) Electrical Shorting In Response to Exposure Fire (DESIREE–FIRE)

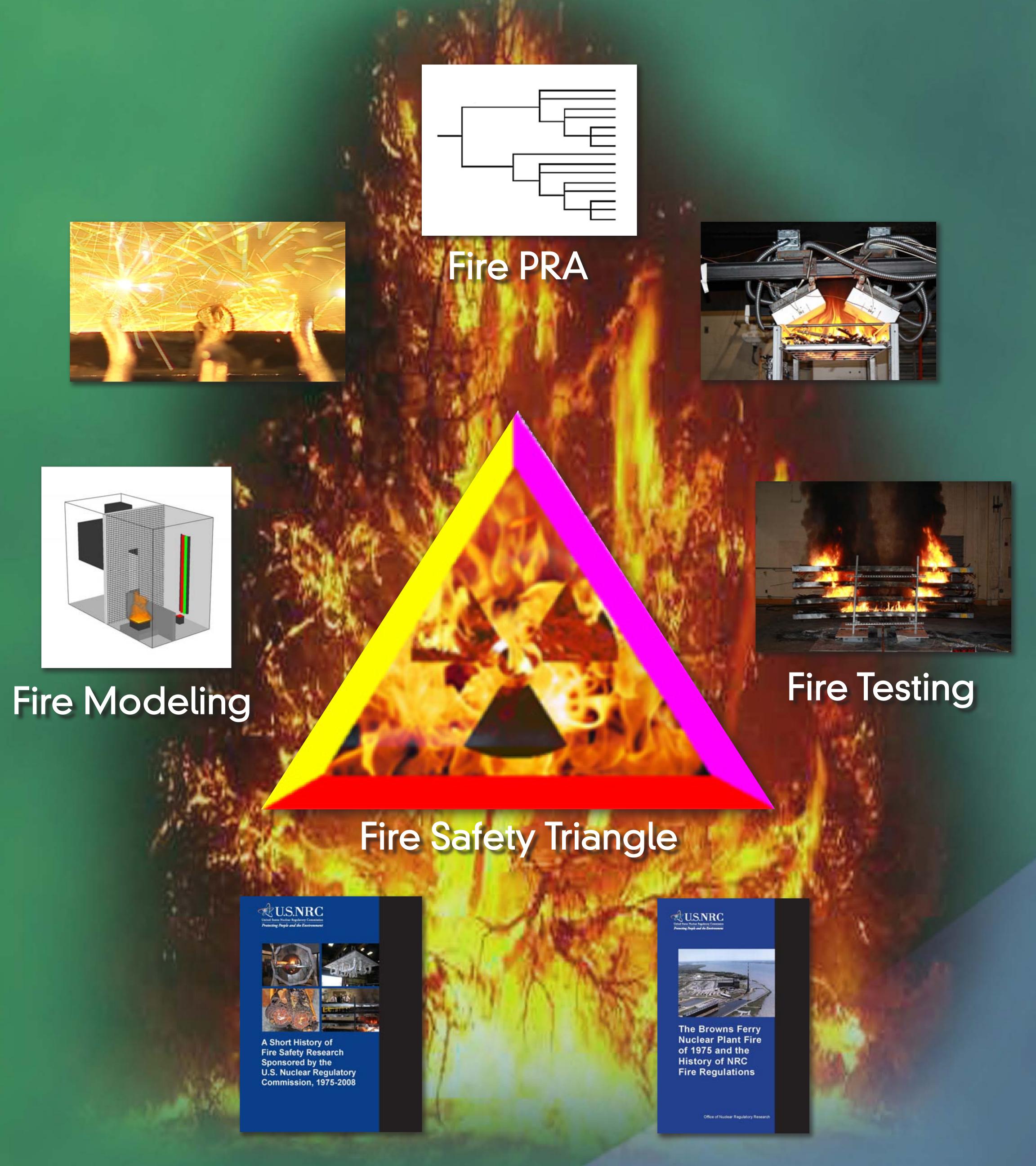
NRC/RES, SNL and EPRI are performing fire testing of DC circuit and documenting the test results. This data will be used to determine the risk-significance of direct current circuit exposed to fire. Testing is currently underway. (Final Report Summer 2010)

Electrical Circuit Phenomena Identification and Ranking Table (PIRT) and Expert Elicitation

NRC/RES and BNL will perform a PIRT and expert elicitation with the goal to update PRA estimates of fire-induced circuit hot short probabilities and durations, along with exploring the current state-of-the-art knowledge of fire-induced circuit failures, to rank importance of circuit failures to plant risk and to identify any areas requiring additional research. (Final Report Winter 2010)

NUREG-1924, "Electrical Raceway Fire Barrier Systems in U.S. Nuclear Power Plants"

NRC/RES is developing a document which provides a complete and comprehensive history of the use of electrical raceway fire barrier systems (ERFBS) in U.S. nuclear power plants including evaluation of barrier performance, problems and resolution, and a summary of ERFBS used at various U.S. nuclear power plants. (Final Report Spring 2010)



Collaboration With External Counterparts

Fire Research Branch collaborative partners include the Electric Power Research Institute (EPRI), National Institute of Standards and Technology (NIST), Sandia National Laboratories (SNL), Brookhaven National Laboratory (BNL), University of Maryland (UMd))









Fire Research Knowledge Management

NUREG/BR-0465, "Fire Protection and Fire Research Knowledge Management Digest"

NRC/RES developed a database of NRC's fire protection regulations, generic information, and fire research documents. Introduced at the RIC 2008 as an Excel-based program designed to help users, this database has been updated to a NUREG/BR. (Final Report Spring 2010)

NUREG/BR-0361, "The Browns Ferry Nuclear Power Plant Fire of 1975 and the History of NRC Fire Safety Regulations"

NRC/RES developed this brochure which includes a database, discussions, and explanation of public documents related to the Browns Ferry fire of 1975 and the history 10 CFR Part 50, Appendix R. (Published February 2009)

NUREG/BR-0364, "Short History of NRC Fire Safety Research"

NRC/RES developed this brochure to document the history of fire safety research from the investigation of the 1975 Browns Ferry fire up to the present application of fire risk assessment. (Published June 2009)

History of NRC Fire Safety Regulations

NRC/RES is developing a brochure covering the history of nuclear power plant fire protection regulations from the 1950s to the present. (Final Report 2011)

Training Sessions

Methods for Applying Risk Analysis to Fire Scenarios (MARIA-FIRES)

NRC/RES and EPRI designed the 2008 Fire PRA Workshop Proceedings as a self-study training course on fire PRA. This document includes presentations, videos, examples and solutions. (Final Report Spring 2010)

Public Fire PRA Workshop 2010

NRC/RES and EPRI joint effort to provide a training workshop to introduce fire PRA, electrical circuit and fire modeling techniques used in the evaluation of fire scenarios in nuclear power plants. (Training to be held Fall/Winter 2010)

Fire Testing

Spent Fuel Shipping Cask Fire Testing

NRC/RES in collaboration with NIST is conducting a spent fuel shipping cask fire testing program which will provide experimental data related to spent fuel shipping cask seal performance in beyond-design-basis fire events. (Small-scale testing Spring 2010)

Cable Heat Release, Ignition, and Spread in Tray Installations of Fires (CHRISTI–FIRE)

NRC/RES in collaboration with NIST is conducting research to quantify the mass and energy released from burning electrical cables. This type of quantitative information will be used to develop more realistic models of cables fires for use in in PRA analyses. Testing is currently underway. (Final Report 2011)

Knowledge for Today and Tomorrow